

# Psychological Differences Between Men and Women: Nature Vs. Nurture

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## ABSTRACT

Psychological differences between men and women have generated a lot of interest, yet the debate over their existence and potential causes has not yet been resolved. This article presents and reviews various literatures analyzing gender psychological differences between men and women. Furthermore, this work considers the various factors that lead to gender differentiation in both biological and societal contexts. Understanding such psychological differences between the sexes has strong clinical implications, and further investigation into the impact of social and biological influences on the sexes' psychologies is necessary to implement such findings in clinical scenarios.

## Introduction

The concept of fundamental differences between men and women has intrigued philosophers and researchers alike for centuries. Today, the debate remains neither easy nor conclusive as scientific findings constantly tilt the scale back and forth in ways that both support and refute fundamental gender psychological differences. Even if gender differences exist, scientists face another vexing problem: does nature or nurture play a larger role in shaping humans into contemporary gender roles? And what should we, as a society, do if gender differences do exist? This literature review will first demonstrate the extent to which psychological differences between men and women exist using various scientific examples. Additionally, this study will further consider the cause of this gender differentiation in both the nature and nurture contexts by understanding, for example, the impact of hormones and parenting. Finally, we will demonstrate how the relevancy of these differences depend on the circumstance: understanding psychological differences can positively affect mental health treatment, but these differences are insignificant regarding human rights and should not be abused to justify inequalities.

## Claims of Gender Psychological Differences

The debate over the existence of gender similarity has waged for decades. Even in ancient Athens, gender differences were a fundamental philosophical debate. Aristotle stated that the courage and justice of men and women “are not... the same”; yet Socrates, in Plato’s *Republic*, claimed that the differences between the genders were not significant enough to alter their roles in an ideal state. (Aristotle, *Politics*; Plato, *Republic*, 453e; Forde, 1997). In the early twentieth century, scientists such as Thorndike (1914), Hollingworth (1918), and Woolley (1914) argued for gender similarities. Believing that gender psychological differences are too small to be significant, these scholars proposed the “gender similarity hypothesis”: males and females are alike on most — but not all — psychological characteristics, asserting that most differences are in the close-to-zero or small range (Hyde, 2005). Hollingworth had come to her conclusion after reviewing available research on gender differences in mental traits and finding little evidence of differentiation. Furthermore, many scientists over the

past two centuries have argued the opposite. Some maintained that purported gender differences in emotion and reason are crucial in the characterization of existing gender social hierarchies. Applying a concept of complementarity — the belief that the traits, strengths, and weaknesses of one group are compensated for or enhanced by the traits, strengths, and weaknesses of another — to women’s and men’s different psychology, nineteenth-century British scientific writing often described women’s traits as complementary to those of men, which reified common lay beliefs about men and women (Shields, 2007).

However, over the past century, numerous extensive studies on this topic have since been conducted with the help of improved technology and methodologies. Thus, this article will primarily focus on studies conducted over the past two decades to use the most up-to-date information. This paper will use the terms “psychological differences” and “personality differences,” as well as “gender roles” and “gender stereotypes” interchangeably, as each pair refers to similar ideas.

### *Gender Differences at Different Life Stages*

From early childhood gender differences in temperament are already noticeable. Boys, for example, recorded higher levels of activity and lower levels of shyness and inhibitory control than girls in a multi-method assessment of a twin sample (Gagne et al., 2013). Even in infancy, meta-analyses find that girls are better at inhibiting responses and show greater sensitivity to environmental changes, greater fearfulness, and lower activity levels than boys (Else-Quest et al., 2006). These differences are generally consistent with societal attitudes towards the sexes, fueled by gender stereotypes — oversimplified notions about the personalities, traits, and behavior patterns of males and females (Laff & Ruiz, 2019). For instance, many often stereotypically regard boys as strong, fast, aggressive, dominant, and high achieving, while girls are traditionally cast as sensitive, intuitive, passive, emotional, and interested in the home and family (Wienclaw, 2011).

Temperamental gender differences are not confined to early life: studies conducted with the elderly yielded similar findings. A study compiled an elderly population’s scores on the Five-Factor Model (FFM), or the Big Five personality traits. Identified in the late twentieth century, the FFM models major human personality traits: agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience (Dziak, 2020). According to this study, elderly women reported moderately higher levels of agreeableness and neuroticism than men, which is in line with another study’s findings that women, on average, are friendlier and disclose negative emotions more easily (Chapman et al., 2007). These studies suggest that gender personality differences persist throughout one’s life and do not diminish over time.

The mentioned findings’ reliance on self-reported data, however, has generated some controversy. Even though self-reporting is one of most common approaches to gathering data, some scholars question the validity of these measures, suggesting that self-reported data are unreliable and susceptible to self-reporting bias. Psychological studies, however, require thorough introspection into the human personality to yield desired results. In this field, the merits of self-reporting methodologies are largely uncontested. People are simply the most-qualified witnesses to their own personalities as they possess a breadth and quality of information, including private and intrapsychic knowledge, that is nearly unrivaled by non-self-reported measures (Althubaiti, 2016; Paulhus & Vazire, 2007).

### *Social Role Theory*

To understand these gendered differences in social behavior, some have utilized a social role theory to argue that a person’s beliefs about the sexes stem from their observations of gender performativity, which further constitute gender roles and thus foster real differences in behavior (Eagly et al., 2000). As such, with the perceived gender roles in mind, people internalize these differences into their actions, creating a self-reinforcing cycle where gender stereotypes prevail. With this explanation, one may, therefore, infer that psychological

gender differences should be less detectable in more egalitarian cultures. Presumably, decades of socially progressive movements that champion equal voting rights and the prohibition of employment discrimination in developed countries, for example, would minimize psychological differences between males and females.

Contrary to this belief, however, some studies find that sex personality differences, according to the FFM, are more common and larger in prosperous, healthy, and egalitarian cultures and concluded that “higher levels of human development — long and healthy lifespans, equal access to knowledge and education, and economic wealth — were the main nation-level predictors of larger sex differences in personality” (Costa et al., 2001; Schmitt et al., 2008). Thus, the psychological contrast between men and women appears to naturally diverge even in progressive environments that minimize traditional gender roles.

If gendered differences were less prominent in developed countries, then we could point to culture at large to wholly explain the phenomenon; however, the findings indicate otherwise. Hence, we must consider other factors to explain the origins of gendered psychological differentiation.

## A Biological Approach

One explanation behind this differentiation can be found biologically, or in “nature.” Sex hormones, for example, dictate many important psychological characteristics at different developmental stages, and research proposes that testosterone, a male sex hormone, is linked with male-typed behavior and choices, such as childhood toy preferences. In 2012, Lamminmäki et al. measured testosterone in infants by monthly urinary sampling in the first six postnatal months and related the area under the curve (AUC) for testosterone to playroom observation of toy choices. The infants’ choices showed clear differences as play with the train correlated positively with testosterone AUC in girls, while play with the doll correlated negatively with testosterone AUC in boys (Lamminmäki et al., 2012). A study by Hines, Constantinescu, and Spencer indicates that individuals whom, because of genetic conditions or because their mothers were prescribed hormones during pregnancy, are prenatally exposed to atypical concentrations of testosterone “show increased male-typical juvenile play behavior, alterations in sexual orientation and gender identity (the sense of self as male or female), and increased tendencies to engage in physically aggressive behavior” (Hines, Constantinescu, & Spencer, 2015). These results suggest a facilitative role of testosterone in gender neurobehavioral differentiation during infancy.

Experiments conducted concerning androgen, a hormone of which males have higher levels, have yielded similar findings. Prenatal androgen exposure is also correlated to differences in children’s activity interests, as girls with congenital adrenal hyperplasia (CAH), a genetic condition that prenatally exposes them to elevated androgens, show increased male-typical toy, playmate, and activity preferences (Hines, 2011). Further evidence from studies of healthy children suggests that androgen exposure, rather than other traits of CAH, are responsible for the observed behavioral differences: children with mothers who were prescribed androgenic progestins (a synthetic steroid hormone with androgenic action) during pregnancy show increased male-typical play, while those whose mothers were prescribed anti-androgenic hormones conversely show reduced male-typical play (Hines, Constantinescu, & Spencer, 2015).

However, biological explanations for gender psychological differences remain ambiguous. Repeatedly, studies conducted for prenatal hormones fail to produce consistent results. For example, the aforementioned Lamminmäki et al. study had tested for both testosterone and androgen yet didn’t find supportive results for androgen (Alexander & Wilcox, 2012). These studies often only found supportive results for only one gender group, such as a 1995 study that found higher levels of mid-pregnancy maternal testosterone suggested male-typical play behavior for infant girls but not boys (Udry, Morris, & Kovenock, 1995). Other studies that follow similar protocols but could not replicate the same results to support testosterone’s relationship with gender-typical play behavior in infants (Hines, Constantinescu, & Spencer, 2015). Complications regarding the unreliability of measuring hormones in samples of maternal blood or amniotic fluid further weakens these find-

ings. It is thus ambiguous whether the failure to yield consistent results is due to inaccurate measurement protocols or a weak link between testosterone or androgen with gender psychological differences (Rodeck, Gill, Rosenberg, & Collins, 1985).

These inconsistent results linking prenatal hormones and gender-linked behavior indicate that a biological explanation for gender psychological differences remains relatively inconclusive. To find a fuller explanation for gender psychological differentiation, we turn to social psychological theories – the “nurture” element.

## A Societal Approach

Some social psychologists contend that children’s interactions with their parents are likely their first socialized experiences and thus one of the most significant and earliest non-biological factors of gendered differentiation (Mesman & Groeneveld, 2017). Research has found that many parents use their children’s sex to guide parenting decisions, regardless of their children’s individual characteristics and behaviors. Culp et al., for example, conducted a study with a single actor infant dressed as either a male or female. When mother-father pairs met the infant in a pink dress named “Beth,” they tended to use higher tones when speaking, display significantly less physical contact, and more often selected the feminine doll to engage with the infant than parent pairs who interacted with the infant named “Adam” dressed in blue overalls. This suggests the existence of gendered parenting, which directs messages to children on how boys and girls should and should not behave (Culp et al., 1983).

Gendered socialization in parenting is mostly expressed implicitly, which can be divided into two categories: direct and indirect messaging. We can also observe gendered parenting in explicit parenting styles, such as whether parents physically discipline their children. Many studies demonstrate differences in parenting styles based on the child’s gender, such as teaching their sons that aggressive reactions are appropriate, in line with stereotypical masculine traits. However, the examples and influences of implicit gender messaging are often more prominent, hence the essay’s focus on this category (Archer, 2004).

Direct gendered parenting practices convey messages by treating the child in a certain way based on sex, as demonstrated in Culp et al.’s study, and can take the form of exposing children to different products such as books, films, and toys (Mesman & Groeneveld, 2017). When parents actively choose to buy female-typical toys (i.e., dolls, cooking sets) for their daughters and male-typical ones (i.e. cars, athletic balls) for their sons, they are implicitly linking their children’s sex to gender roles as they encourage their children to play with these objects. Parents’ reactions to children’s behavior are another example of direct messaging, as their evaluative feedback indicates whether a certain act is stereotypical or not. Parents often respond negatively when their children engage in gender-atypical activities, and many studies report that mothers often respond less negatively to risky and disruptive behaviors in sons, in line with the stereotype that boys are risk-takers and confrontational (Leaper et al., 1995). Treatment of children based on sex sends differential messages of approval or disapproval that children interpret as appropriate to their gender.

Children also deduce gendered information from observing their parents’ activities, a form of indirect messaging in gendered parenting (Leaper, 1995). Humans derive information from models in their immediate environment, and children are especially attentive to modeling influences, particularly their parents (Bussey & Bandura, 1999). Children can infer gender stereotypes from observing the behaviors of men and women: something as simple as seeing their mother doing household chores could lead them to associate females with domestic settings and activities (Bussey & Bandura, 1999). Furthermore, a study examining parents’ narration of a picture book with gender-neutral drawings of children found that adults more often described the angry drawings as boys and associated sad and happy drawings with girls. This demonstrates how parents indirectly exhibit

gender-differentiated emotion socialization by emphasizing submissive emotions that support harmonious interactions (i.e., happiness) or signal distress (i.e., sadness) as female-typical, and disharmonious emotions that assert one's own interest over others' (i.e., anger) as male-typical (van der Pol et al., 2015).

Parents' use of different parenting techniques significantly imparts the sexes' divergent stereotypes to their children, who then internalize these ideologies and implicitly influence others and future generations as living models of gender roles. In a sense, social role theorists are right. Social constructs have contributed to the self-reinforcing cycle of gender psychological differences; we are not only the recipients of early gender role teachings, but they also shape us into active teachers of gender performativity.

## Discussion

These psychological differences between men and women could have significant applications, especially for mental healthcare. Psychological gender differences have vital clinical implications on possible differential treatment. Research has not only confirmed gender differences in prosocial behavior of healthy individuals but also highlighted the impact of gender on the behavior of depressed patients. Cáceda et al. reported higher rates of reciprocal behavior (i.e., trust and cooperation with others) in depressed men compared to depressed women, who exhibited greater levels of self-centered behavior (Cáceda et al., 2014). Men and women's clinical preferences for anxiety also appear to be significantly different regarding therapy choice (women preferred psychotherapy while men favored support groups), coping styles (women had a higher tendency to use prescription medication than men), and help-seeking behavior (men were more likely to identify stigma and societal judgments as barriers to seeking help) (Liddon et al., 2018). Understanding the differential experiences of mental health disorders is crucial to maximizing the effectiveness of mental health policies and treatments. Identifying and honoring client preferences in therapy also significantly improves treatment outcomes and reduces the likelihood of clients dropping out prematurely (Swift et al., 2011). Seeing that gender commonly influences treatment predilections, gender psychological differences matter when developing effective approaches in mental health care.

However, claims of gendered differences in psychology should not be inflated to moralize acts of gender inequality. Gender roles and performativity have serious costs. Eagly, Makhijani, and Klonsky's meta-analysis of studies on workplace leaders' gender and evaluations found that women were devalued relative to their male counterparts when adopting stereotypically masculine styles of leadership, violating the feminine stereotypes of caringness and gentleness (Eagly, Makhijani, & Klonsky, 1992). Socially accepted gender differences can even affect children and their academic performance. The unsustainable stereotype of boys being better at mathematics than girls is reflected in parents having lower expectations for their daughters' math success than boys (Lummis & Stevenson, 1990). Children's self-confidence and performance is thus strongly correlated with parents' support and expectations, so girls may be disadvantaged and find it difficult to succeed in a mathematically-oriented field compared to boys due to their parents', and mainstream society's, undermining beliefs (Frome & Eccles, 1998).

It is crucial not to overstate gender differences nor to apply them in areas that scientific evidence does not support, as it could potentially lead to more harms than benefits. Hence, scholars must continue to explore psychological differences between the sexes at different life periods — before birth, early childhood, after exposure to human society, etc. — to extend our current understanding of the origins of gender differentiation and the influence of possible factors, biological and social, on this differentiation. The current dearth of clarification on hormonal influence on gender differentiation should be the focus of future research. Scientifically-backed information about such differences can better guide therapists in their practice and contribute to the dismantling of gender stereotypes — be it a product or cause of gender differentiation. Haphazard prejudices and assumptions without thorough scientific backing will only lead to further discrimination; the purpose of these studies should be to help people reach their full potential, not hinder their ability to reach it.

## Conclusion

Both “nature” and “nurture” play fundamental roles in gendered psychological development and differences. Through a study of biological determinants and parenting practices, I have not only investigated various explanations of this differentiation, but also elucidated how psychological differences between men and women influence, and are influenced by, our stereotypes and social constructs. Acknowledging psychological differences may matter in a clinical context, as it may significantly improve treatment outcomes in mental healthcare by considering therapy preferences between the genders. However, one must never overstate such differences to justify inequality between the genders; abusing scientific findings to justify social difference should never be the aim of science, and throughout history, society has been plagued with far too much of its consequences for this to continue.

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## References

- Alexander, G. M., & Wilcox, T. (2012). Sex differences in early infancy. *Child Development Perspectives*, 6(4), 400-406. <https://doi.org/10.1111/j.1750-8606.2012.00247.x>.
- Althubaiti, A. (2016). Information bias in health research: Definition, pitfalls, and adjustment methods. *Journal of Multidisciplinary Healthcare*, 9, 211-217. <https://doi.org/10.2147%2FJMDH.S104807>.
- Archer, J. (2004). Sex differences in aggression in real-world settings: A meta-analytic review. *Review of General Psychology*, 8(4), 291-322. <https://doi.org/10.1037/1089-2680.8.4.291>.
- Aristotle. (1999). *Politics* (B. Jowett, Trans.). Kitchener: Batoche Books. (Original work published ca. 350 BCE).
- Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review*, 676-713. <https://doi.org/10.1037/0033-295X.106.4.676>
- Cáceda, R., Moskovciak, T., Prendes-Alvarez, S., Wojas, J., Engel, A., Wilker, S. H., Gamboa, J. L., & Stowe, Z. N. (2014). Gender-Specific effects of depression and suicidal ideation in prosocial behaviors. *PLoS ONE*, 9(9). <https://doi.org/10.1371/journal.pone.0108733>.
- Chapman, B. P., Duberstein, P. R., Sörensen, S., & Lyness, J. M. (2007). Gender differences in five factor model personality traits in an elderly cohort. *Personality and Individual Differences*, 43(6), 1594-1603. <https://doi.org/10.1016/j.paid.2007.04.028>.
- Costa, P. T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology*, 81(2), 322-331. <https://doi.org/10.1037/0022-3514.81.2.322>.

- Culp, R. E., Cook, A. S., & Housley, P. C. (1983). A comparison of observed and reported adult-infant interactions: Effects of perceived sex. *Sex Roles: A Journal of Research*, 9(4), 475-479. <https://doi.org/10.1007/BF00289787>
- Dziak, M. (2020). Big five personality traits. In *Salem press encyclopedia*. Salem Press.
- Eagly, A. H., Makhijani, M. G., & Klonsky, B. G. (1992). Gender and the evaluation of leaders: A meta-analysis. *Psychological Bulletin*, 111(1), 3-22. <https://doi.org/10.1037/0033-2909.111.1.3>.
- Frome, P. M. & Eccles, J. S. (1998). Parents' influence on children's achievement-related perceptions. *Journal of Personality and Social Psychology*, 74(2), 435-452. <https://doi.org/10.1037/0022-3514.74.2.435>.
- Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & Van Hulle, C. A. (2006). Gender differences in temperament: A meta-analysis. *Psychological Bulletin*, 132(1), 33-72. <https://doi.org/10.1037/0033-2909.132.1.33>.
- Forde, S. (1997). Gender and Justice in Plato. *The American Political Science Review*, 91(3), 657-670. <https://doi.org/10.2307/2952081>
- Gagne, J. R., Miller, M. M., & Goldsmith, H. H. (2013). Early-but modest-gender differences in focal aspects of childhood temperament. *Personality and Individual Differences*, 55(2), 95-100. <https://doi.org/10.1016/j.paid.2013.02.006>.
- Hines, M. (2011). Gender development and the human brain. *Annual Review of Neuroscience*, 34, 69-88. <https://doi.org/10.1146/annurev-neuro-061010-113654>.
- Hines, M., Constantinescu, M., & Spencer, D. (2015). Early androgen exposure and human gender development. *Biology of Sex Differences*, 6(1). <https://doi.org/10.1186/s13293-015-0022-1>.
- Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist*, 60(6), 581-592. <https://doi.org/10.1037/0003-066X.60.6.581>.
- Laff, R., & Ruiz, W. (2019). *Child, family, and community*. Open Education Resource LibreTexts Project.
- Lamminmäki, A., Hines, M., Kuiri-Hänninen, T., Kilpeläinen, L., Dunkel, L., & Sankilampi, U. (2012). Testosterone measured in infancy predicts subsequent sex-typed behavior in boys and in girls. *Hormones and Behavior*, 61(4), 611-616. <https://doi.org/10.1016/j.yhbeh.2012.02.013>
- Leaper, C., Leve, L., Strasser, T., & Schwartz, R. (1995). Mother-child communication sequences: Play activity, child gender, and marital status effects. *Merrill-Palmer Quarterly*, 41(3), 307-327.
- Liddon, L., Kingerlee, R., & Barry, J. A. (2018). Gender differences in preferences for psychological treatment, coping strategies, and triggers to help-seeking. *British Journal of Clinical Psychology*, 57, 42-58. <https://doi.org/10.1111/bjc.12147>.
- Lummis, M., & Stevenson, H. W. (1990). Gender differences in beliefs and achievement: A cross-cultural study. *Developmental Psychology*, 26(2), 254-263. <https://doi.org/10.1037/0012-1649.26.2.254>.

- Mesman, J., & Groeneveld, M. G. (2017). Gendered parenting in early childhood: Subtle but unmistakable if you know where to look. *Child Development Perspectives, 12*(1). <https://doi.org/10.1111/cdep.12250>.
- Paulhus, D. L., & Vazire, S. (2007). The self-report method. In R. W. Robins, C. R. Fraley, & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 224-239).
- Plato. (1943). *The Republic* (B. Jowett, Trans.). New York: Modern Library. (Original work published ca. 375 BCE).
- Rodeck, C. H., Gill, D., Rosenberg, D. A., & Collins, W. P. (1985). Testosterone levels in midtrimester maternal and fetal plasma and amniotic fluid. *Prenatal Diagnostics, 5*(3), 175-181. <https://doi.org/10.1002/pd.1970050303>.
- Schmitt, D. P., Realo, A., Voracek, M., & Allik, J. (2008). Why can't a man be more like a woman? Sex differences in big five personality traits across 55 cultures. *Journal of Personality and Social Psychology, 94*(1), 168-182. <https://doi.org/10.1037/0022-3514.94.1.168>.
- Shields, S. A. (2007). Passionate men, emotional women: Psychology constructs gender difference in the late 19th century. *History of Psychology, 10*(2), 92-110. <https://doi.org/10.1037/1093-4510.10.2.92>.
- Swift, J. K., Callahan, J. L., & Vollmer, B. M. (2011). Preferences. *Journal of Clinical Psychology, 67*(2), 155-165. <https://doi.org/10.1002/jclp.20759>.
- Udry, J. R., Morris, N. M., & Kovenock, J. (1995). Androgen effects on women's gendered behaviour. *Journal of Biosocial Science, 27*(3), 359-368. <https://doi.org/10.1017/s0021932000022884>.
- van der Pol, L. D., Groeneveld, M. G., van Berkel, S. R., Endendijk, J. J., Hallers-Haalboom, E. T., Bakermans-Kranenburg, M. J., & Mesman, J. (2015). Fathers' and mothers' emotion talk with their girls and boys from toddlerhood to preschool age. *Emotion, 15*(6), 854-64. <https://doi.apa.org/doi/10.1037/emo0000085>.
- Wienclaw, R. A. (2011). Gender roles. In Salem Press (Ed.), *Sociology reference guide: Gender roles and equity* (pp. 33-40). Salem Press.